

REPORT
OF THE
STUDY ON

ELIMINATING THE THREAT POSED
BY NUCLEAR BALLISTIC MISSILES (U)

Volume I
THE DEFENSE TECHNOLOGY PLAN (U)

James C. Fletcher, *Study Chairman*

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DEFENSIVE TECHNOLOGIES STUDY TEAM
1801 North Beauregard Street, Alexandria, Virginia 22311




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EXECUTIVE SUMMARY (U)

OVERVIEW

(U) The DTST reviewed, evaluated, and prioritized the technological issues underlying the ballistic missile defense (BMD) of the continental United States and its allies. We reviewed a set of defense system concepts and supporting technologies in various stages of development and created both fiscally constrained and technology-limited program plans that fully evaluate these technologies.

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BACKGROUND

(U) In his nationally televised speech of 23 March 1983, President Reagan called on the scientific community to turn its talent to developing a means to render the threat of ballistic missiles "impotent and obsolete." He also recognized that this would be "a formidable technical task ... that may not be accomplished before the end of this century." A subsequent National Security Study Directive (NSSD), 6-83, called for two studies to develop this initiative. The studies were to

- o "... assess the role defensive system deployments could play in future security strategy [of the United States and our allies]" and
- o "... develop a long-term R&D program aimed at developing and validating technologies required for systems [which would be] militarily effective in defending against ballistic missiles."

(U) The task of leading the response to NSSD 6-83 was assigned to the Department of Defense (DOD) with assistance from the Department of Energy (DOE) and other government agencies. The DOD established two groups to address the problem, the Future Security Strategy Study (FS³) Team and the Defensive Technologies Study Team (DTST). The work of the DTST is summarized herein.

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STUDY OBJECTIVES

(U) The task of the DTST was to construct the technology development program called for in NSSD 6-83. During the development of this technology plan, we maintained contact and exchanged ideas with the FS³ group but concentrated on developing a comprehensive plan unconstrained by policy considerations. However, major policy questions arising from this technology development are summarized in the plan.

STUDY APPROACH

(U) Organization and Schedule. The basic full-time study team consisted of 50 experts from DOD, the Military Departments, the National Laboratories, industry, and academia under the overall direction of Dr. James C. Fletcher. The team was divided into the following panels for detailed analysis of current and potentially available technology:

- o Surveillance, acquisition, tracking, and kill assessment;
- o Directed energy weapons;
- o Conventional weapons;
- o Battle management; command, control, and communications (C³); and data processing;
- o Systems concepts;
- o Soviet countermeasures and tactics; and
- o Systems integration.

(U) In addition to the DTST panels, a Services and Agencies Panel was organized for support and liaison from the government organizations concerned with ballistic missile defense and related technologies.

(U) The efforts of the DTST were reviewed by a top-level group of experts consisting of members of the White House Science Council, the Defense Science Board, and selected consultants. This Executive Scientific Review Group, chaired by Dr. Edward Frieman, interacted frequently with the study team and reviewed the final report.

(U) A complete listing of DTST participants is provided in Appendix B.

(U) To insure that all opportunities were considered and all views heard, the study team spent much of the first 30 days in briefings and discussions with industry and service representatives. In addition, periodic progress briefings were given by each panel to the entire team and to the Scientific Review Group. The DTST effort was begun on 1 June 1983 and work was essentially concluded by 1 October 1983.

(U) Methodology. To develop the technology plan, we reviewed alternative BMD system constructs to identify potentially promising technologies. We tested their promise by developing a rather extensive list of potential Soviet countermeasures that are documented in the report. Our limited analysis of counters to those countermeasures did not reveal any response to BMD that makes such a defense infeasible. On the other hand, such responsive measures complicate greatly the system requirements that must be satisfied if an effective defense is to be realized.

(U) After developing a generic BMD system construct consisting of a defense-in-depth broken into four phases, boost, post-boost, midcourse, and terminal, we assessed technology applicable to each phase. The objectives of the assessment were to develop "bulk filters" to eliminate unpromising ideas early and to identify the "long poles" that are key to the viability of one or more phases of an effective BMD system. We separated technologies into categories and structured a plan based on giving priority to the "long poles." Both a technology-limited plan and a fiscally constrained plan were developed.

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ELEMENTS OF A DEFENSE-IN-DEPTH

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GENERAL CONCLUSIONS

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SPECIFIC CONCLUSIONS

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Defense-Wide Systems

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Boost-Phase

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Post-Boost Vehicle and Midcourse

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Terminal

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RECOMMENDED PROGRAM AND COSTS

Development Plan

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Cost Summary

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(U) All costs in this report are in FY83 dollars. Only those Service, Agency, and DOE programs of direct relation to the task assigned to DTST are included in computing the \$800 million and \$400 million figures. A more detailed budget for these two plans is presented in Table I.

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